COMPAQ

64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter

Installation Guide

Notice

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Installing the Compaq 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter

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About This Guide

This guide is designed to be used as step-by-step instructions for installation and upgrades to the Compaq StorageWorks 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter.

> ⚠ **WARNING:** To reduce the risk of personal injury from electrical shock and hazardous energy levels, only authorized service technicians should attempt to install this equipment. Consult the Safety Information and user documentation provided with your computer before attempting this installation.
>
> Many servers and workstations are capable of producing energy levels that are considered hazardous and are only intended to be serviced by qualified personnel trained in dealing with these hazards. Do **not** remove enclosures or attempt to bypass any interlocks that may be provided for the purpose of removing these hazardous conditions.

Text Conventions

This document uses the following conventions to distinguish elements of text:

Keys	Keys appear in boldface. A plus sign (+) between two keys indicates that they should be pressed simultaneously.
USER INPUT	User input appears in a different typeface and in uppercase.
FILENAMES	File names appear in uppercase italics.
Menu Options, Command Names, Dialog Box Names	These elements appear in initial capital letters.
COMMANDS, DIRECTORY NAMES, and DRIVE NAMES	These elements appear in uppercase.
Type	When you are instructed to *type* information, type the information **without** pressing the **Enter** key.
Enter	When you are instructed to *enter* information, type the information and then press the **Enter** key.

Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.

WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Symbols on Equipment

These icons may be located on equipment in areas where hazardous conditions may exist.

Any surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.
WARNING: To reduce the risk of injury from electrical shock hazards, do not open this enclosure.

Any RJ-45 receptacle marked with these symbols indicates a Network Interface Connection.
WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

⚠️ 🔥   Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.
WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.

⚠️   Power Supplies or Systems marked with these symbols indicate the equipment is supplied by multiple sources of power.

WARNING: To reduce the risk of injury from electrical shock, remove all power cords to completely disconnect power from the system.

Getting Help

If you have a problem and have exhausted the information in this guide, you can get further information and other help in the following locations.

Compaq Technical Support

You are entitled to free hardware technical telephone support for your product for as long you own the product. A technical support specialist will help you diagnose the problem or guide you to the next step in the warranty process.

In North America, call the Compaq Technical Phone Support Center at 1-800-OK-COMPAQ[1]. This service is available 24 hours a day, 7 days a week.

Outside North America, call the nearest Compaq Technical Support Phone Center. Telephone numbers for world wide Technical Support Centers are listed on the Compaq website. Access the Compaq website at http://www.compaq.com.

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[1] For continuous quality improvement, calls may be recorded or monitored.

Be sure to have the following information available before you call Compaq:

- Technical support registration number (if applicable)

- Product serial number (s)

- Product model name(s) and numbers(s)

- Applicable error messages

- Add-on boards or hardware

- Third-party hardware or software

- Operating system type and revision level

- Detailed, specific questions

Compaq Website

The Compaq website has information on this product as well as the latest drivers and Flash ROM images. You can access the Compaq website at http://www.compaq.com.

Compaq Authorized Reseller

For the name of your nearest Compaq Authorized Reseller:

- In the United States, call 1-800-345-1518.

- In Canada, call 1-800-263-5868.

- Elsewhere, see the Compaq website for locations and telephone numbers.

Chapter **1**

Introduction

The Compaq *64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter™* contains one low voltage differential (LVD) SCSI channel that interfaces directly between the server Peripheral Component Interface (PCI) Local Bus and up to 15 SCSI devices. The adapter supports industry-standard interfaces and protocols. The 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter can be used with all SCSI devices, including Wide Ultra3 SCSI, Wide Ultra2 SCSI, Wide-Ultra SCSI-3, Fast-Wide SCSI-2, and Fast-SCSI-2 devices.

Features

Standard features of the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter:

- Supports universal 32-bit PCI and universal 64-Bit PCI

- Supports 33 MHz PCI and 66 MHz PCI

- Supports Wide Ultra3 SCSI, a 16-bit, 40 MHz bus that provides a 160 MB/s data transfer rate

- Automatically detects and communicates with Wide Ultra3 SCSI, Wide Ultra2 SCSI, Wide-Ultra SCSI-3, Fast-Wide SCSI-2, and Fast-SCSI-2 devices

- Contains one 68-pin Wide LVD SCSI internal connector that supports Wide Ultra3 SCSI, Wide Ultra2 SCSI, Wide-Ultra SCSI-3, and Fast-Wide SCSI-2

- Contains one 68-pin Wide Single-Ended (SE) SCSI internal connector that supports Wide-Ultra SCSI-3 and Fast-Wide SCSI-2

■ Contains one 68-pin wide SCSI external connector that supports Wide Ultra3 SCSI, Wide Ultra2 SCSI, Wide-Ultra SCSI-3, and Fast-Wide SCSI-2

■ Contains one 50-pin narrow SCSI internal connector to support legacy devices

Wide Ultra3 SCSI Support

The 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter provides 64-Bit PCI bus master operation and SCSI data transfer rates of up to 160 MB/s, provided that all components are Wide Ultra3 capable. This combination allows high throughput in many network application environments, including resource-sharing, database-servicing, and high-performance backup solutions.

The adapter also supports tagged command queuing, which allows SCSI hard drives to queue and sort multiple commands, then execute those commands simultaneously.

The 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter complies with ANSI SCSI-3 standards, supporting Wide Ultra3 SCSI, Wide Ultra2 SCSI, Wide-Ultra SCSI-3, Fast-Wide SCSI-2, and Fast-SCSI-2 devices. The 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter can support several different SCSI devices at one time.

PCI

The 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter interface to the server processor is the PCI local bus. The PCI bus is a high-performance, 64-bit bus with multiplexed address and data lines. The PCI bus provides a high-speed (up to 528 MB/s) path between the system unit and peripherals. Peripheral devices, such as Wide Ultra3 SCSI adapters, benefit the most from the high I/O performance of the PCI bus.

The 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter is backward- compatible in a 32-bit/33 MHz or 64-bit/33 MHz PCI slot.

The 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter is a PCI bus master device and conforms to Rev. 2.1 and 2.2 of the PCI Local Bus Specification.

SCSI Connectors

The 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter has the following connectors:
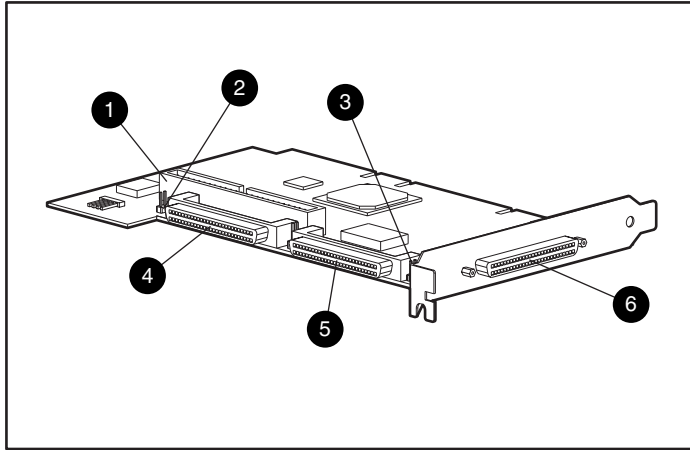
Figure 1-1. 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter

❶ Internal 50-pin Narrow SE SCSI legacy connector at J4 (cannot be used simultaneously with ❹)

❷ TE (Termination Enable) SEC jumper at J6 (should be jumpered)

❸ TE (Termination Enable) PRI jumper at J2 (should be left open)

❹ Internal 68-pin Wide SE SCSI legacy connector at J5 (cannot be used simultaneously with ❶)

❺ Internal 68-pin Wide LVD/SE SCSI connector at J3

❻ External 68-pin Wide LVD/SE SCSI connector at J1

The external connector is a standard wide SCSI connector. It is mounted on the slot panel and accessible through the back of the server. Screwlocks are provided for securing external SCSI cables to the standard Wide SCSI connectors.

> **IMPORTANT:** If an SE SCSI device is connected to this controller, any other connected devices (including LVD devices) will run at the reduced performance level of an SE device.

SCSI IDs

The 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter contains one SCSI bus that support up to 15 peripherals. The SCSI bus has internal and external connectors. Peripherals on the bus must have a unique SCSI ID ranging from 6 to 0, then 15 to 8, with 6 being the highest priority and 8 being the lowest priority. SCSI IDs on all peripherals must be either manually set with switches or jumpers on the device itself, or automatically set on Compaq products that support hot-pluggable drives. The SCSI IDs determine the priority of the peripheral device when attempting to access the SCSI bus. The server assigns the SCSI adapter to the highest priority by setting the ID of the adapter to 7.

Multiple Adapter Installation

The following considerations apply when you install more than one 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter:

■ Each adapter has one SCSI bus with isolated LVD and SE connectors.

■ Each adapter supports one set of unique SCSI Ids (from 6 to 0, 15 to 8). Each peripheral on a bus must be assigned its own unique ID.

SCSI Termination

All SCSI buses require termination on both ends of the bus to prevent signal degradation. The 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter supplies the termination on the adapter end of the SCSI bus. Hot plug drives do not require terminators on the ribbon cable, because terminators are included on the drive backplane. Non-hot plug internal drives require terminators on the ribbon cable. Individual SCSI devices in Compaq servers should not contain bus termination.

Wide Ultra3 and Wide Ultra2 require multi-mode or LVD-only terminators (rather than SE only terminators used with Wide-Ultra SCSI-3, Fast-Wide SCSI-2, and Fast-SCSI-2).

External SCSI buses must also be terminated. This termination is supplied in Compaq external storage systems. Individual SCSI devices in Compaq storage systems should not contain bus termination.

⚠ **CAUTION:** To prevent boot error messages, the integrated SCSI controller on the system board of the server must be terminated at all times. If you are using the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter to replace the integrated controller, you should leave a terminated SCSI ribbon cable connected to the system board, even if there are no SCSI devices attached to this cable.

SCSI Cables

Cables are provided with most Compaq server products that require cabling. If you find that you need an additional cable or that one was not provided with your server product, you can order the necessary cables from your local Compaq Reseller or authorized Compaq Service Provider. See Table 1-1 for external cable option kit part numbers.

Table 1-1
Compaq External Cable Option Kit Part Numbers

Cable Option Kit	Part Number	Alternate Part Number
VHDCI to Wide SCSI 6 foot	341176-B21	295644-B21
VHDCI to Wide SCSI 12 foot	341177-B21	295645-B21
Wide SCSI to Wide SCSI 6 foot	313375-001	
Wide SCSI to Wide SCSI 12 foot	313375-002	

NOTE: An internal 68-pin to 50-pin SCSI adapter (part number 199618-001) is also available.

If the option kit part number for the cable you need is not listed here, or for additional ordering information, refer to the Compaq website at www.compaq.com.

SCSI Cable Connectors

To identify the various SCSI cables required 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter installation in the various configurations of Compaq servers, see Figure 1-2.

Keep these characteristics of SCSI cables in mind:

■ External standard Wide SCSI cables have a round wire with securable connectors, and the connector heads are smaller than 68-pin external wide SCSI connector heads.

■ Internal SCSI cables have a flat ribbon cable with push-on connectors.

■ Internal 68-pin wide SCSI ribbon cables (Wide Ultra2 SCSI, Wide-Ultra SCSI-3, Fast-Wide SCSI-2) are narrower than 50-pin SCSI (Fast-SCSI-2) cables.

■ Compaq SCSI cables are keyed so they cannot be installed incorrectly.
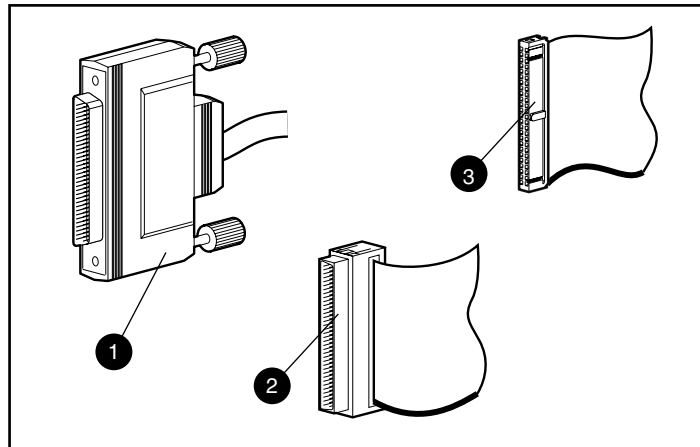
Figure 1-2. Identifying SCSI cable connectors

❶ External 68-pin wide SCSI connector

❷ Internal 68-pin wide SCSI connector

❸ Internal 50-pin narrow SCSI connector

Chapter 2

Installing the Compaq 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter

This chapter discusses the installation of the Compaq 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter in a Compaq server.

⚠ **WARNING:** To reduce the risk of personal injury from electrical shock and hazardous energy levels, only authorized service technicians should attempt to install this equipment. Consult the Safety Information and user documentation provided with your computer before attempting this installation.

Many servers are capable of producing energy levels that are considered hazardous and are only intended to be serviced by qualified personnel trained in dealing with these hazards. Do **not** remove enclosures or attempt to bypass any interlocks that may be provided for the purpose of removing these hazardous conditions.

Items Needed

■ Torx T-15 screwdriver

■ Compaq SmartStart and Support Software CD

■ Documentation that came with your Compaq server

Preparing the Server

Use the following general guidelines to prepare the server for installation of the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter.

> ⚠ **WARNING:** When working with equipment installed in a rack, be sure that the equipment/rack is stable before beginning.

To prepare the server:

1. Perform a normal system shutdown.

2. Turn OFF the server.

3. Turn OFF all peripheral devices attached to the server.

4. Unplug the AC power cord from the outlet, then unplug it from the server.

5. Disconnect all peripheral devices attached to the server.

Opening the Server

Before installing 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter, you must open the server and gain access to the PCI bus expansion slots. For instructions on opening the server and accessing the PCI slots, refer to the documentation that came with your server.

After you have accessed the PCI slots, proceed to the next section, "Installing the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter."

Installing the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter

Use the following general guidelines to install 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter in a Compaq server.

> ⚠ **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching.

> △ **CAUTION:** Electrostatic discharge (ESD) can damage electronic components. Be sure you are properly grounded before beginning this procedure. See Appendix B for ESD information.

6. Locate the PCI bus expansion slots. Refer to the documentation that came with your server for the specific location of these slots.

7. Depending on your server model, remove the retaining screw or open the expansion slot latches that secure the PCI slots.

8. Remove the slot cover from the PCI slot. (You may want to save this protective cover to use if the slot becomes empty again.)

9. Install the adapter into the PCI slot and press it firmly into place. The contacts on the adapter edge should be fully seated in the system board connector.

10. Depending on your server model, secure the adapter by replacing the retaining screw or by closing the slot latch.

To connect the adapter to other devices, proceed to the next section, "Cabling the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter."

Cabling the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter

The 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter can be connected to external SCSI devices (located in outside units) or to internal SCSI devices (located in the server). The following sections provide cabling information for both external and internal connections.

> **IMPORTANT:** All SCSI devices (except CD-ROM drives) that are on the same SCSI bus must be either internal to the server or in an external storage system, but not both. When using both internal and external SCSI devices, connect each type to a separate port.

External SCSI Connections

To connect the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter to SCSI devices located outside the server, you will need one external SCSI cable for each channel to which you are connecting.
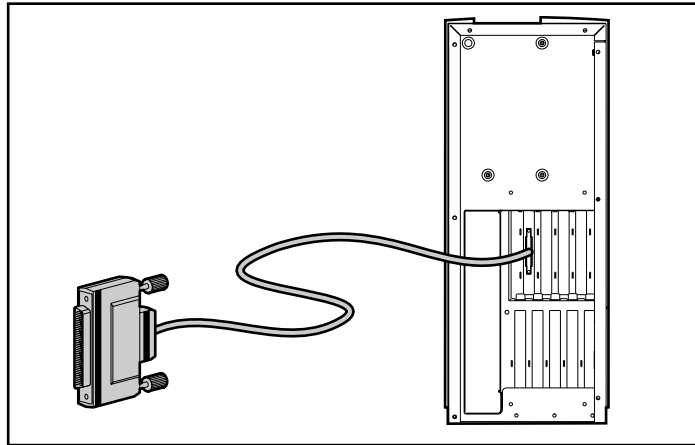
Figure 2-1. External SCSI cabling on a Compaq server

To connect to a wide Ultra3 SCSI peripheral, use a standard Wide SCSI-Wide SCSI cable.

If this cable is not furnished with your Compaq external SCSI device, it can be obtained from your local Compaq Reseller. See "SCSI Cables" in Chapter 1 for information on ordering the correct cables.

To attach the cable:

11. Attach the appropriate end of the cable to the external peripheral according to the instructions that came with the device. Make sure to secure the thumbscrews.

12. Attach the cable to the adapter and secure the thumbscrews.

After your cabling is complete, proceed to "Completing the Installation," later in this chapter.

Internal SCSI Connections

Use the information in this section to connect the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter to internal SCSI devices. The most common cabling scenarios include:

■ Placing hard drives or other devices on a separate SCSI bus

■ Replacing the integrated SCSI controller with 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter

■ Connecting additional internal SCSI devices

> △ **CAUTION:** If your server has an integrated Wide Ultra3 SCSI controller, the controller must be terminated at all times to prevent boot error messages.

> **IMPORTANT:** In order to run in LVD mode (Wide Ultra3), all components, including the ribbon cable, must be LVD-capable

Placing Hard Drives or Other Devices on a Separate SCSI Bus

Use the following guidelines if you are using 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter to provide a separate SCSI bus for one or more devices in the server.

To add a separate SCSI bus, you may need an internal SCSI cable designed specifically for your server model. Refer to the documentation that came with your server to determine if you need an additional cable. If the cable was not provided with your system, you can obtain it from your local Compaq Reseller. See "SCSI Cables" in Chapter 1 for information on ordering the correct cable for your product.

13. Remove any devices from the existing SCSI bus that you want to move to the new SCSI bus.

14. Install any new SCSI devices.

15. Locate the new SCSI cable. Plug one end of the cable into the appropriate connector on the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter.

> **IMPORTANT:** Do not connect SCSI cables to both internal and external connectors from the same port. If you have both SE and LVD devices in your server, use a separate port for each.

For more information on connecting cables, see "Cabling the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter," earlier in this chapter.

16. Attach one or more device connectors on the cable to the SCSI device(s) or backplane connector.

Proceed to "Completing the Installation," later in this chapter.

Replacing the Integrated SCSI Controller

Use the following guidelines if you are replacing the integrated SCSI controller with the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter:

17. Unplug the original SCSI cable from the system board.

18. Plug the SCSI cable into the appropriate connector on the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter.

> **IMPORTANT:** There are two main restrictions on connecting SCSI devices to this controller.
>
> ■ Connectors J1 and J3 can be used for either LVD or SE SCSI devices. However, connecting an SE device will cause any LVD devices attached to the same controller to slow down to SE speeds.
>
> ■ Connectors J4 and J5 can only be used for SE devices. These two connectors cannot be used simultaneously.

For more information on connecting cables, see "Cabling the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter," earlier in this chapter.

19. Depending on your server model, you may need to secure the cable by clipping it to another component in the server. Refer to your system documentation for specific instructions on internal cabling.

The 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter now supports the internal SCSI devices. The integrated controller on the system board can be used to support other SCSI devices. If you are not using the integrated controller to support other SCSI devices, it must be terminated.

Proceed to "Completing the Installation," later in this chapter.

Connecting Additional Internal SCSI Devices

Use the following guidelines to connect new SCSI devices to the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter. To perform this procedure, you will need to order an additional SCSI cable appropriate for each type of device you are connecting to the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter. See "SCSI Cables" in Chapter 1 for information on ordering the correct cable for your server model.

1. Install the additional SCSI device(s) in the server. Refer to the documentation provided with your system for specific installation instructions.

2. Plug the new cable(s) into the appropriate connector(s) on the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter.

3. Route the cable(s) according to the instructions in your server documentation.

4. Attach the cables to the new SCSI devices.

Completing the Installation

After all cabling and connections have been completed, reassemble the server by following these guidelines:

1. Be sure all cables are routed correctly and are not restricting or being pinched by other components. Refer to your server documentation for proper routing of the cables for your server model.

2. Reconnect any peripheral devices to the server.

3. Plug the AC power cord into the server, then into a grounded AC outlet.

4. Turn on any peripheral devices attached to the server.

5. Turn on the server.

6. Run the Compaq System Configuration Utility to enable the system to recognize the new SCSI adapter configuration. You can run this utility from the System Configuration diskettes, Compaq SmartStart and Support Software CD, or from your hard drive (if it was previously installed in the system partition of your boot hard drive).

Updating the Firmware and Installing the Drivers

Software drivers must be installed in the server to enable communication between the processor and the new 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter.

Some Compaq servers also require updated system ROM firmware before they can take advantage of the new features of 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter. Compaq recommends running the System ROMPaq Utility to be sure your server has the latest ROM version. For more on this, see "Upgrading the System ROM," in Chapter 3.

Proceed to Chapter 3, "Installing Firmware and Software," to install the necessary drivers for your operating system and model.

Chapter **3**

Installing the Firmware and Software

This chapter outlines driver installation steps to set up the Compaq 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter in a server running any of the following operating systems:

■ Microsoft Windows NT 3.51 and 4.0

■ Microsoft Windows 2000

■ SCO UnixWare 7.x

■ SCO OpenServer 5

■ Novell NetWare 5.1

■ IBM OS/2

After you install the 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter in your server, you must complete the installation by upgrading the system ROM (if necessary) and installing the new drivers for your operating system. Follow the procedures outlined in this chapter to guide you through these important steps.

Upgrading the System ROM

System ROM can be upgraded by *flashing* the ROM using a special Compaq utility called System ROMPaq. This utility replaces the existing contents of the ROM with another version stored in a disk file. Use the information below to access and run System ROMPaq.

ROMPaq Diskettes

The ROMPaq utilities must be run from diskette. The latest version of the ROMPaq diskette can be created from the Compaq SmartStart and Support Software CD that was supplied with your 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter option kit. Use the latest version of ROMPaq because it most effectively supports your new 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter.

Materials Needed

You will need the following items to create a System ROMPaq utility diskette:

■ Compaq SmartStart and Support Software CD (supplied in 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter option kit)

■ One blank diskette

■ Access to a server with a bootable CD-ROM drive

Creating Diskettes

To create a ROMPaq diskette:

1. Boot the computer from the Compaq SmartStart and Support Software CD.

2. From the Compaq System Utilities screen select Create Support Software.

3. At the Diskette Builder screen, select the appropriate option for your server model.

4. Follow the instructions on the screen to create the ROMPaq diskette.

Running System ROMPaq

System ROMPaq is used to update the firmware in Compaq servers. The
64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter has enhanced
capabilities, and many existing servers may not be able to take advantage of
these capabilities without updated firmware. Since it is difficult to determine
when the firmware needs to be updated, Compaq recommends that you run the
latest System ROMPaq on all servers when installing a 64-Bit/66 MHz Single
Channel Wide Ultra3 SCSI Adapter.

To run System ROMPaq, perform the following steps:

1. Place the System ROMPaq diskette in the server diskette drive.

2. Boot the server by turning on the power.

3. Press **Enter** at the Welcome screen.

4. At the Select A Device screen, select the server from the list of
   programmable devices. This may be the only item in the list.
   Press **Enter**.

5. At the Select An Image screen, you will see:

Device to reprogram:	*your server*
Current ROM revision:	*date of existing ROM version*
Select Firmware Images:	*date of latest ROM version*

   Press **Enter**.

6. Review the information on the Caution screen:

Device to reprogram:	*your server*
Current ROM revision:	*date of existing ROM version*
Selected ROM revision:	*date of ROM version to be installed*

   Press **Enter** to reprogram the system ROM or press **Esc** to discontinue
   reprogramming and return to the Select An Image screen.

7. "Reprogramming Firmware" indicates that the system ROM is being
   reprogrammed.

   IMPORTANT: Do not interrupt this cycle. Interrupting the ROM reprogramming will leave
   the firmware in an unknown state. You may not be able to boot the server if this happens.
   You will be notified that reprogramming is completed.

8. When ROMPaq is finished reprogramming the system ROM, press **Esc**
   to exit the System ROMPaq utility.

9. Remove the System ROMPaq diskette and reboot the server by cycling
   the power (cold boot).

If you have not yet installed your new 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter, you can do so at this time. See Chapter 2 for general hardware installation and cabling information, then proceed to the next section, "Installing the Drivers."

Installing the Drivers

Software drivers must be installed in the server to enable communication between the processor and the new 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter. This installation procedure assumes that you have already installed your 64-Bit/66-MHz Single Channel Wide Ultra3 SCSI Adapter and your operating system. The drivers and installation procedures are unique to the operating system being used. Use the information in this section to find the location of the driver (or drivers) and necessary installation information for your operating system. All the drivers and support documentation can be found on the Compaq SmartStart and Support Software CD supplied with your new 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter.

Windows NT 3.51 or 4.0

Use the following instructions to install the driver on a system already running Windows NT 3.51 or 4.0. The driver file, named *ADPU160M.SYS,* is located on the Compaq SmartStart and Support Software CD supplied with your new 64-Bit/66-MHz Single Channel Wide Ultra3 SCSI Adapter.

1. Start Windows NT 3.51 or 4.0 on the system and log on to an account with administrative privileges.

2. Insert the Compaq SmartStart and Support Software CD into the CD drive.

3. Click Start, choose Settings, and click Control Panel.

4. Double-click the SCSI Adapters icon.

5. Choose the Drivers tab and click Add.

6. Click Have Disk and change the drive letter to point to your CD drive.

7. Select the driver file *ADPU160M.SYS* found in the following directory root:

   \CPQSUPSW\NTSSD\SCSI\160M\ADPU160M.SYS

8. Click OK to add the driver to be installed.

9. Click OK again to copy the driver into your system and exit this setup.

Windows 2000

Use the following instructions to install the driver on a system already running Windows 2000. The driver file, named *ADPU160M.SYS*, is located on the Compaq SmartStart and Support Software CD supplied with your new 64-Bit/66-MHz Single Channel Wide Ultra3 SCSI Adapter.

1. Start Windows 2000 on the system and log on to an account with administrative privileges.

2. Insert the Compaq SmartStart and Support Software CD into the CD drive.

3. Click Start, choose Settings, and click Control Panel.

4. Double-click the System icon.

5. Click the Hardware tab.

6. Click Device Manager to display a list of all the hardware devices installed, then scroll down to SCSI and RAID Controllers and open the folder.

   You should see the SCSI Controller listed if the SCSI adapter was properly installed as described in Chapter 2.

7. Double-click the SCSI Controller.

8. Click the Driver tab on the SCSI Controller Properties screen, then click the Update Driver button.

9. Click Next.

10. Select Display A List Of The Known Drivers For This Device So That I Can Choose A Specific Driver, then click Next.

11. Click Have Disk and change the drive letter to point to your CD drive.

12. Select the driver file *ADPU160M.SYS* found in the following directory root:

    \CPQSUPSW\NTSSD\SCSI\160M\ADPU160M.SYS

13. Click OK to add the driver to be installed.

14. Click Next.

    You may see an Update Driver Warning screen; click Yes to proceed.

15. The driver you have copied will be listed. Select it and click Next to install.

16. Click Finish to exit this setup.

SCO UnixWare 7.x

Use the following instructions to install the driver on a system already running UnixWare 7.xx. The driver file, named *ADST70,* is located on the UnixWare 7.xx EFS diskette containing HBA drivers.

> **NOTE:** Compaq Extended Feature Supplement (EFS) version 7.xx or later for SCO UnixWare 7.x is required for operation with the Compaq 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter.

1. Start the system and log in with root privileges.

2. Insert the Compaq SmartStart and Support Software CD into the CD drive.

3. Select Compaq SCO UnixWare 7.x EFS on the Diskette Builder screen and create the diskettes for EFS version 7.xx or later.

4. Use the SCO *PKGADD* utility to install the Compaq EFS from the diskettes. Online documentation is included on the EFS diskettes. The driver name is *ADST70*.

5. Insert the diskette created with EFS drivers labeled HBA into the diskette drive.

6. At the Unix command line, enter the following command:

   pkgadd -d diskette1 –L

   A menu will list all drivers on the diskette.

7. Install the driver by entering the driver number associated with file name *ADST70*.

8. Remove the diskette, then type q to quit.

9. Reboot your system by typing init 6.

SCO OpenServer 5

To install the driver for the 64-Bit/66-MHz Single Channel Wide Ultra3 SCSI Adapter on a system already running SCO OpenServer 5, you must first create a set of Compaq Extended Feature Supplement (EFS) diskettes. These diskettes are then used to install EFS on the system (after removing older EFS versions, if necessary).

> **NOTE:** Compaq Extended Feature Supplement (EFS) version 5.36 or later for SCO OpenServer 5 is required for operation with the Compaq 64-Bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter.

Building the EFS Diskettes

EFS diskettes can be built either from the Web or from a Compaq SmartStart and Support Software CD.

■ To build the diskettes from the Web, download the latest EFS for SCO OpenServer 5 from the site www.compaq.com/support/files/server/us/index.html

■ To build the diskettes from the SmartStart and Support Software CD:

1. Insert the Smart Start and Support Software CD (version 4.80 or later) into the CD drive. This CD launches the application automatically.

2. At the System Utilities screen, click OK.

   The Compaq SmartStart Diskette Builder Utility is launched.

3. Expand the Compaq Window and select Compaq SCO OpenServer 5.0 EFS Version 5.36 (or a later version) and continue to the next screen.

4. Chose the option Create Software Diskettes To Floppy Only and follow the on-screen instructions.

   A set of five diskettes will be created.

5. Select Finish when done and then exit from the application.

If your system has an older version of EFS installed, it must be removed before installing the new EFS version. Follow the instructions in the next section, Removing an Older Version of EFS.

If your system does not have another version of EFS installed, go directly to the section Installing the New EFS.

Removing an Older Version of EFS

1. Log in as root.

2. Enter /etc/shutdown -g0 -y to shut down the system.

3. At the Safe to Power Off message, press **Enter.**

4. When the system reboots, you will see the prompt

   Press <Ctrl>+<d> or enter the root password

   Enter the root password to begin system maintenance mode.

5. Type /etc/custom and press **Enter.**

   The main custom menu should appear.

6. Press **Tab** to highlight the software selections, and use the arrow keys to highlight Compaq Extended Feature Supplement. Press **Enter.**

7. Press **Tab** to go back to the menu bar. Choose Software and press **Enter.**

8. Choose Remove Software and press **Enter.**

9. You are prompted to verify the removal of all packages. Choose Remove and press **Enter.**

10. When all the EFS packages have been removed, a message will display that the kernel was relinked. Press **Enter** to continue.

11. At the message Removal Complete, press **Enter** to continue.

12. Exit the installation procedure:

    a. Choose Host and press **Enter.**

    b. Choose Exit and press **Enter.**

13. Continue with the step 5 of the procedure described in the next section to install a new version of EFS.

> **WARNING:** DO NOT reboot the system before installing the new EFS version. Omit the first four steps of the procedure in the following section.

Installing the New EFS

1. Log in as root.

2. Enter /etc/shutdown -g0 -y to shut down the system.

3. At the Safe to Power Off message, press **Enter.**

4. When the system reboots, you will see the prompt

   Press <Ctrl>+<d> or enter the root password.

   Enter the root password to begin system maintenance mode.

5. Type /etc/custom and press **Enter.**

   The main custom menu should appear.

6. Choose Software (on the menu bar) and press **Enter.**

7. Choose Install New and press **Enter.**

8. You will be asked what host you want to install from. Select the local host and press **Enter.**

   NOTE: Only the local host is supported.

9. Insert diskette Volume 1 of the Compaq EFS for SCO OpenServer Release 5 into the diskette drive.

10. Choose Continue and press **Enter.**

    The initial EFS screen appears. Each component of the EFS is listed below the title as it is installed.

11. When prompted, enter the IP address, broadcast address, and network mask for each installed network controller.

12. When prompted, insert diskette Volume 2 of the Compaq EFS for SCO OpenServer Release 5 into the drive and press **Enter.**

13. When installation of the drivers and utilities is complete, the following message is displayed:

    During this installation, the kernel was relinked.

    You must reboot your system to make this kernel effective. Press **Return** to continue.

14. When the message Installation Complete is displayed, press **Return.**

    EFS should be on the All Software On... list when rebuilding has finished.

15. Exit the installation procedure:

    a. Choose Host and press **Enter.**

    b. Choose Exit and press **Enter.**

16. At the # prompt, enter reboot.

Novell NetWare 5.1

This section describes how to install the 64-Bit/66-MHz Single Channel Wide Ultra3 SCSI Adapter driver on a system already running Novell NetWare 5.1. The driver file, named *ADPT160M.HAM,* can be found in the following subdirectory on the SmartStart and Support Software CD:

\CPQSUPSW\NSSD\NWPA

Use the following steps to install the driver *ADPT160M.HAM* and the file *ADPT160.DDI* from the SmartStart and Support Software CD onto a system running NetWare 5.1.

1. Use the down command to down the server.

2. Power on the system and start NetWare 5.1.

3. Insert the SmartStart and Support Software CD into the CD drive.

4. Copy the following files from the subdirectory
   \CPQSUPSW\NSSD\NWPA into your NetWare directory:
   > *ADPT160.HAM*
   > *ADPT160.DDI*

5. Remove the CD and shutdown the system.

6. Install the Compaq 64-Bit/66-MHz Single Channel Wide Ultra3 SCSI Adapter.

7. Power on the system and start NetWare 5.1.

   NetWare will detect the new adapter and will attempt to load the driver.

8. Follow the screen prompts to load the driver *ADPT160.HAM*.

9. When presented with a list of drivers, select the driver and press **Esc** to load it.

   NOTE: Although the **Esc** option is not shown on this screen, you must use it in order to load the driver. Pressing **Enter** will not load the driver.

IBM OS/2

Use the following instructions to install the 64-Bit/66-MHz Single Channel Wide Ultra3 SCSI Adapter driver on a system already running IBM OS/2. The driver file, named *AICU160.ADD,* is located on the SmartStart and Support Software CD supplied with your new 64-Bit/66-MHz Single Channel Wide Ultra3 SCSI Adapter.

1. Insert the Smart Start and Support Software CD (version 4.80 or later) into a system and reboot. This CD launches the application automatically.

2. At the System Utilities screen, click OK.

3. Choose the option Create Software Diskettes From CD Only and move to the next screen.

4. Select Compaq OS/2 Support Software - 4.50A Or Later Version and move to the next screen.

5. Chose the option Create Software Diskettes To Floppy Only, then click through the following screens until a screen indicating Please Insert Diskette 4 Of 5… is displayed.

6. Insert a formatted 1.44 MB diskette into the diskette drive and click OK. The drivers related to the 64-Bit/66-MHz Single Channel Wide Ultra3 SCSI Adapter Controller will be copied onto the diskette.

7. Click Finish when done.

8. Exit from the application.

9. Insert the floppy diskette 4 into the floppy drive.

10. At the command prompt, type ddinstal.

11. Select A:\ADD as the source directory and select Install.

12. Select Compaq Adaptec SCSI Driver for OS/2 and proceed. This will install the selected driver.

13. After the driver installation has finished, reboot the system.

14. Reboot the system again to load the *AICU160.ADD* driver.

Appendix **A**

Regulatory Compliance Notices

Federal Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (that is, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

The rating label on the device shows which class (A or B) the equipment falls into. Class B devices have an FCC logo or FCC ID on the label. Class A devices do not have an FCC logo or ID on the label. Once the class of the device is determined, refer to the following corresponding statement.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Class B Equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

■   Reorient or relocate the receiving antenna.

■   Increase the separation between the equipment and receiver.

■   Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

■   Consult the dealer or an experienced radio or television technician for help.

Declaration of Conformity for Products Marked with FCC Logo, United States Only

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. For questions regarding this declaration, contact:

Compaq Computer Corporation
P. O. Box 692000, Mail Stop 510101
Houston, Texas 77269-2000

Or call (281) 514-3333

To identify this product, refer to the Series number found on the product.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Compaq Computer Corporation may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Canadian Notice (Avis Canadien)

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Class B Equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards):

- EN55022 (CISPR 22) - Electromagnetic Interference
- EN50082-1 (IEC801-2, IEC801-3, IEC801-4) - Electromagnetic Immunity
- EN60950 (IEC950) - Product Safety

Japanese Notice

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Taiwanese Notice

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Appendix B

Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage, observe the following precautions:

■   Avoid hand contact by transporting and storing products in static-safe containers.

■   Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.

■   Place parts on a grounded surface before removing them from their containers.

■   Avoid touching pins, leads, or circuitry.

■   Make sure you are properly grounded when touching a static-sensitive component or assembly.

Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

■   Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ± 10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.

■   Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.

■   Use conductive field service tools.

■   Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an Authorized Compaq Reseller install the part.

IMPORTANT: For more information on static electricity, or assistance with product installation, contact your Authorized Compaq Reseller.

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